another esterase is present in addition to acetylcholinesterase, in spite of a claim to the contrary (*6*). Since serum cholinesterase was not demonstrable in rat brain with the specific substrate, carbonaphthoxy choline (*4*), a small amount of the staining of the central nervous system with indoxyl acetate and butyrate must be attributed to the presence of a nonspecific esterase.

Other methods for the histochemical demonstration of esterases have been described (*4, 5, 12–15*). A comparison of the distribution of enzymatic activity with these methods, with and without enzymatic inhibitors, will be reported elsewhere.

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Manuscript received July 10, 1951.

Comments and Communications

Statement on Peyote

IN CONNECTION with the current national campaign against narcotics, there has been some propaganda to declare illegal the peyote used by many Indian tribes. We are professional anthropologists who have made extensive studies of Peyotism in various tribes. We have participated in the rites and partaken of the sacramental peyote. We therefore feel it our duty to protest against a campaign which only reveals the ignorance of the propagandists concerned.

Briefly put, the propagandists argue that Peyotists are simply addicted to a narcotic and intoxicant, which they use orgiastically.

Peyote is a small, carrot-shaped, spineless cactus which, in the U. S., grows in the Rio Grande Valley. The top of the plant is usually cut off and sun-dried, forming the peyote button. When taken internally, it appears to have remarkable mental and physical effects, although these have not been thoroughly studied.

According to Webster's *Dictionary,* a narcotic is a drug that "allays sensibility, relieves pain, and produces profound sleep;" an intoxicant "excites or stupefies." According to Merck's *Manual,* the symptoms of drug addiction are increased tolerance and dependence. On the basis of our experience, we would say that peyote seems to have none of these effects. It does not excite, stupefy, or produce muscular incoordination; there is no hangover; and the habitual user does not develop any increased tolerance or dependence. As for the immorality that is supposed to accompany its use, since no orgies are known among any Indian tribes of North America, the charge has as much validity as the ancient Roman accusation of a similar nature against the early Christians.

Actually Peyotism is a religion, with a national intertribal organization incorporated under the name of "The Native American Church of the United States." Its modern form, developed about 1870, is Christianity adapted to traditional Indian beliefs and practices. The basic tenets of the Native American Church are given in its articles of incorporation:

> The purpose for which this corporation is formed is to foster and promote religious believers in Almighty God and the customs of the several Tribes of Indians throughout the United States in the worship of a Heavenly Father and to promote morality, sobriety, industry, charity, and right living and cultivate a spirit of self-respect and brotherly love and union among the members of the several Tribes of Indians throughout the United States . . . with and through the sacramental use of peyote.

The belief is that God put some of his Holy Spirit into peyote, which he gave to the Indians. And by eating the sacramental peyote the Indian absorbs God's Spirit, in the same way that the white Christian absorbs that Spirit by means of the sacramental bread and wine. Peyote is used by Peyotists in two ways: spiritually and medically.

The traditional practice of many Indian tribes was to go off in isolation to contemplate and fast until a supernatural vision was achieved. This is now replaced by a collective all-night vigil in which, through prayer, contemplation, and eating peyote, the Peyotist receives a divine revelation. For the Peyotist, this occurs because he has put himself in a receptive spiritual mood and has absorbed enough of God's power from the peyote to make him able to reach God. A scientific interpretation might be that the chemicals in peyote diminish extraneous internal and external sensations, thus permitting the individual to concentrate his attention on his ideas of God and, at the same time, affecting vision and hearing so that these ideas are easily projected into visions.

The all-night rite is highly formalized. One man functions as priest, with the help of three assistants. During the rite they pray for the worshipers at fixed intervals, while the other men and women pray to themselves in low voices. Early in the rite everyone takes four pieces of peyote; later, anyone may take as many more as he or she thinks proper. Most of the time is occupied in having each man, in rotation, sing four religious songs that correspond to hymns sung in white churches.

Peyote is also considered as a catholicon, or cure-all. If a sick person is spiritually clean, the Holy Spirit in the peyote will help him get well.

We can state categorically that these two circumstances—spiritual and medical—are the only ones under which peyote is eaten by members of the Native American Church.

Finally, something should be said of the communion meal eaten toward the end of the all-night rite. It usually consists of water, corn, fruit, meat, and sometimes candy; these symbolize the major foods important to the Indians, and they pray to God to give them adequate amounts. According to the antipeyote propagandists, the fruit and candy are eaten to get over a "peyote hangover"!

It will be seen from this brief description that the Native American Church of the United States is a legitimate religious organization deserving of the same right to religious freedom as other churches; also, that peyote is used sacramentally in a manner corresponding to the bread and wine of white Christians.

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Pseudoscience and the DDT Scandal

JOHN PFEIFFER (SCIENCE, **114**, 47 [1951]) should be entirely correct when he urges that scientists and science writers combat pseudoscience with terse, articulate communications to the public. But is he? Is the production of pseudoscientific articles traceable to writers without scientific experience in most instances? Let us examine Mr. Pfeiffer's proposal in the light of recent experiences. The DDT scandal, which has scarcely blown over, will serve as an example chosen from among many candidates.

A prize-winning science writer published the following statement in the Pittsburgh *Post-Gazette* during 1949: " . . . the mysterious ailment known as 'Virus X' disease, which has been breaking out in increasing numbers of American communities, affecting millions, is actually DDT poisoning." The article begins "DDT, the great bug-killer, may turn out to be one of the most devastating biological weapons ever loosed by a people upon themselves." In the next two short paragraphs one finds such fearful phrases as "boomerang," "wildly indiscriminate use," "grim menace to man himself," "frank alarm," "poisoning power," etc.

This is only a small sample of the fantastic language used by science writers and scientists alike, I am sorry to report. One scientist declared before a congressional committee, "I would not touch DDT with a ten-foot pole." Again, a science article in the New York *Post,* April 9, 1949, carried the nerve-quieting headline: DDT AND YOU! HOW IT MANACES THE NATION'S HEALTH. The first paragraph reads as follows: "Back in December, 1945, two research scientists, Dr. Horace S. Telford and James E. Guthrie of Ashland, Ohio, published a report in the highly respected periodical, *Science,* which indicated that DDT spraying of pastures or woodlands where dairy cattle graze, might poison users of their milk."

The above are merely a few samples of the superlative and absolute phrases used to describe the "menace of DDT" to mankind. Obviously, we are dealing here with a disaster inflicted on mankind by criminally careless and unduly optimistic scientists, or we are confronted with heedless defamation and malicious gossip that amounts to a first-rate scandal, created by scientists and science writers, who have received prizes from leading scientific associations for their efforts to popularize science.

The investigations by Telford and Guthrie, used to introduce one lengthy, vituperative article, were carried out in the Ohio laboratory which I direct. True, those scientists found that DDT or a toxic derivative may appear in milk of dosed animals, but they demonstrated that the dosages must be large and regularly used. From that work and from additional data that were collected promptly and published quickly (*Soap Sanit. Chemicals* [Dec. 1945]), Dr. Telford concluded that DDT was relatively nontoxic when used as an insecticide, and that it might be used safely for controlling flies on cattle. I concurred in that decision, and DDT was widely used without detriment to anyone's health, notwithstanding the headlines proclaiming that the menace threatened millions. Before congressional committees reputable scientists have patiently repeated the refrain—not one American has sickened or died as a result of the insecticidal usage of DDT. On the contrary, much sickness, economic loss, and annoyance which can be traced to insect activity have been averted by the use of DDT. Actually, therefore, the disaster, the threatening menace, were purely verbal. Both in theory and in actual use the insecticidal dosages of DDT were well below levels that are toxic to humans, and the DDT menace proves to be a bad dream.

By use of the "logical" techniques and literary styles of fanatics, scientists have caused the scientific method to be identified with the bombastic procedures